

# DAIMLERCHRYSLER

DaimlerChrysler Corporation

Stephan J. Speth

Director

Vehicle Compliance & Safety Affairs

December 22, 2004

Ms. Kathleen C. DeMeter, Director  
Office of Defects Investigation  
National Highway Traffic Safety Administration  
U.S. Department of Transportation  
400 Seventh Street, SW  
Washington, D.C. 20590

Reference: NVS-212mjl; EA04-013

Dear Ms. DeMeter:

This document contains DaimlerChrysler Corporation's ("DCC") response to the referenced inquiry regarding 1998-2000 model year DCC minivans. In reaching our analysis and conclusions, and by providing the information contained herein, DCC is not waiving its claim to attorney work product and attorney-client privileged communications.

DCC believes that this investigation should be closed in light of the Safety Recall D17/Lifetime Extended Warranty initiated in September, 2004 (NHTSA Recall 04V-480).

As you know, the Safety Recall component of this campaign includes the free replacement of clocksprings on vehicles with 70,000 miles or less. The warranty on the clockspring is extended for the lifetime of higher mileage vehicles. Your staff expressed concern about whether the 70,000 mile limitation is appropriate.

DCC has consistently maintained that the backwinding condition seen in the field in these vehicles is the result of intervening service or repair, and not the result of a manufacturing defect in the installation of the clocksprings. This contrasts with the circumstances that led to the 2002 recall of 1996-1998.5 minivans, which had a different clockspring. In those vehicles, the evidence suggested that some of the backwound clocksprings in the field may have been installed erroneously at the manufacturing plant, and that this occurred with more than random frequency.

DCC has pointed to the fact that the clockspring used in the subject vehicles, which is not the same one involved in the 2002 recall, is internally identical to those that have been used on millions of other DCC products for many years without issue.

Nevertheless, in an effort to address the agency's concerns, DCC undertook a survey of high mileage minivans from the subject vehicle population: the 1998 – 2000 model years. DCC identified 26 vehicles, 15 of which had more than 70,000 miles and an additional five vehicles which had between 65,000 and 70,000 miles. Eight of the vehicles had mileages in excess of 100,000 miles. The average mileage was 82,600 miles. Criteria for selection for the survey included: no prior service for "airbag light on," no prior service to the clockspring or steering column and no prior accidents involving a driver airbag deployment. The reasons for these criteria were to rule out the possibility of service-induced backwinding. In all cases, the clockspring was properly centered with no evidence of backwinding or fatigue and the airbag circuit resistance was within specifications.

This new information strongly corroborates DCC's position that this population of vehicles is not prone to having clocksprings that were backwound at the factory, and that field incidences of clockspring backwinding in these vehicles are due to intervening service and repair. This new information also supports DCC's position that a clockspring that is backwound at the factory will fail early in the life of the vehicle, well before the 70,000 mile threshold defining the recall population.

To recap the information that has been provided to the agency in this investigation, DCC asserts the following:

- The subject parts are internally identical to those that have been used on millions of other DCC products for many years without issue or suggestion that there is a defect trend in this component. The causal factors that can lead to a backwound clockspring include (1) random assembly plant installation errors and (2) improper assembly following any service procedure that involves decoupling the steering linkage. Due to the nature of the condition, it is difficult to determine when the damage occurred, especially on older vehicles. When the condition does manifest itself, it will always provide notice through illumination of the mandated cluster warning lamp. In fact, as set forth below, at least one other issue may cause the warning lamp to illuminate when there is no condition adversely affecting the availability of the driver air bag in the event of a crash.
- In the unlikely event of a backwound fatigue of the clockspring conductive ribbon, all DCC vehicles have a mandated warning light system that alerts the driver that the airbag system needs immediate attention from a trained dealership technician, as noted in the vehicle owners manual. As was also shown during the original investigation, this condition would typically manifest itself initially through intermittent illumination of the lamp, during which time the driver air bag system remains completely functional. In fact,

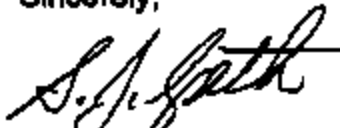
the warning lamp can even be continuously illuminated for some period of time and the system remains fully functional.

- In the very limited number of single side deployments that have occurred, it is known from the vehicle inspections where stored fault codes in the control module were read, that the vehicles warning lamp was on for a significant amount of time without being serviced by a trained dealership technician. Only a small number of alleged injuries, all minor in nature, have been reported and were not attributed to the non-deployment of the driver airbag. The facts show that most owners, while dissatisfied with the out of pocket cost, are actually responding to the warning and having the repair completed before there is any functional effect on the airbag. Only in rare and isolated cases where an owner ignores the clear notice could there be any risk to motor vehicle safety. In addition, considering there are approximately 1.2 million of these vehicles on the road, and that they are from 5 to 7 years old, the lack of field incidences of airbag deployment failures attributable to backwound clocksprings is notable. If this condition were widespread, clearly a trend should have developed by this point in time.
- The terminal resistance issue identified on the 7-circuit clocksprings built into these vehicles could likely have a substantial influence on the complaint rate, even though this condition will not affect proper deployment of the driver airbag. Based on DCC's findings during the original investigation, terminal resistance issues may very well affect a significant portion of the 7-circuit parts that develop illumination of the air bag warning lamp. Data supporting this contention has been provided to NHTSA. This condition further inflates the true number of clocksprings that will ultimately result in an open circuit, the subject of this inquiry, yet it is a real issue to our customers and dealers, since it cannot be easily diagnosed.
- As discussed above, DCC conducted a High Mileage NS Vehicle Survey. The data clearly demonstrate that all inspected clocksprings were within the circuit resistance specifications, showed no signs of a backwinding condition, and were properly centered when removed from their vehicle. DCC verified the above by subjecting each clockspring to a circuit continuity check, a component X-Ray, a circuit resistance check, and a tape centering check. This data clearly shows that a properly installed clockspring assembly will not experience wear out during the life of the vehicle. DCC maintains that vehicles serviced for any of the Labor Operation Codes, listed in this response, could contribute to the clockspring backwinding or overwinding condition if the service procedures are not followed. It is impossible for DCC to verify after the fact whether proper service repair procedures were followed on any given vehicle. Nevertheless, there is nothing in the record of this investigation that disputes DCC's belief that when the recommended service repair procedure is followed, the clockspring will not become backwound or overwound and will last the life of the vehicle.

It is DCC's continuing position that the customers are responding to the mandated warning lamp that alerts the driver that the airbag system needs immediate attention from a trained dealership technician. Therefore, DCC believes that the alleged condition does not present an unreasonable risk to motor vehicle safety. Nonetheless, in an attempt to resolve any customer concerns, DCC launched recall D17 (limited replacement and lifetime extended warranty). This campaign assures the greatest likelihood of achieving the lowest level of risk possible with the least invasive action. It also impresses upon consumers the need to seek proper diagnosis when a warning lamp is illuminated and provides a no-cost remedy for the life of the vehicle, regardless of the cause of damage to the clockspring assembly.

This investigation should be closed.

Sincerely,

A handwritten signature in black ink, appearing to read "S. J. Speth", written in a cursive style.

Stephan J. Speth

Attachment and Enclosures

**ATTACHMENT**

- Q1. Furnish a list of all repairs of the subject vehicles that require disconnecting the steering column assembly from the intermediate shaft. Also, furnish DaimlerChrysler's repair procedure, labor operation number, and problem code for each such repair.**
- A1. The list of repairs for the 1998 through 2000 model year NS vehicles that require disconnecting the steering column assembly from the intermediate shaft are shown in the chart below:**

<b>GEAR ASSEMBLY, POWER STEERING</b>	<b>19-00-01-05</b>
<b>COUPLING/INTERMEDIATE SHAFT</b>	<b>19-20-12-02</b>
<b>STEERING COLUMN</b>	<b>19-34-05-01</b>
<b>INSTRUMENT PANEL ASSEMBLY</b>	<b>23-11-15-01</b>
<b>I/P REINFORCEMENT</b>	<b>23-11-15-05</b>
<b>HEATER CORE</b>	<b>24-65-01-01</b>
<b>EVAPORATOR COIL</b>	<b>24-65-02-01</b>
<b>EVAPORATOR HOUSING</b>	<b>24-65-31-01</b>
<b>DISTRIBUTION ASSEMBLY</b>	<b>24-65-31-07</b>
<b>LINER, EVAPORATOR COIL</b>	<b>24-65-38-02</b>

Fault codes for the above reference labor operation are provided below.

<b>06</b>	<b>Bent</b>
<b>07</b>	<b>Binds, sticks or seized</b>
<b>08</b>	<b>Blocked</b>
<b>10</b>	<b>Broken bolts or studs</b>
<b>11</b>	<b>Broken or cracked</b>
<b>16</b>	<b>Casting Process Defect</b>
<b>27</b>	<b>Damaged</b>
<b>37</b>	<b>Excessive Wear</b>
<b>41</b>	<b>Foreign Material</b>
<b>51</b>	<b>Improperly Installed</b>
<b>54</b>	<b>Improperly Assembled</b>
<b>64</b>	<b>Misaligned or mismatched</b>
<b>65</b>	<b>Leaks</b>
<b>67</b>	<b>Noisy rattles (loose)</b>
<b>68</b>	<b>Noisy</b>
<b>69</b>	<b>Discolored</b>

**ATTACHMENT**

71	Oil Leak
81	Poor fit
90	Seal defect
E1	Housing leaks
E8	Tube damage
G8	Shifter assembly defect
K4	Loose
TM	Tilt mechanism defect
X2	Split, cut or torn
X8	Stripped threads
XP	Odor
3R	High/Low operating effort
3X	Warped or out of round
6E	Housing Improper Machined

The detailed recommended service repair procedures are included in Enclosure 01 – Service Repair Procedures.

- Q2. State, by model and model year, a total count for all claims or repairs whether paid or not paid by DaimlerChrysler to date that relate to any repair described in Request No. 1 above for the subject vehicles associated with the alleged defect (i.e., clockspring complaint vehicles; see enclosed list of 1407 VIN's compiled by ODI).**

**Separately, for each such claim or repair, state the following information:**

- a. DaimlerChrysler's claim or repair number;**
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;**
- c. VIN;**
- d. Repair date;**
- e. Vehicle mileage at time of repair;**
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;**
- g. Labor operation number;**
- h. Problem code;**
- i. Replacement part number(s) and description(s);**
- j. Concern stated by customer; and**
- k. Comment, if any, by dealer/technician relating to claim and/or repair.**

**ATTACHMENT**

**Provide this information in Microsoft Access 2000, or a compatible format, entitled "REPAIR DATA."**

- A2.** The detailed count of warranty claims, for the list of 1407 VIN's supplied by ODI that relate to the referenced labor operation codes in Question 1, are shown in the chart below:

GEAR ASSEMBLY, POWER STEERING	0	2	0
COUPLING/INTERMEDIATE SHAFT	0	6	0
STEERING COLUMN	7	19	6
INSTRUMENT PANEL ASSEMBLY	1	2	0
I/P REINFORCEMENT	0	0	0
HEATER CORE	1	0	0
EVAPORATOR COIL	2	28	9
EVAPORATOR HOUSING	1	3	1
DISTRIBUTION ASSEMBLY	0	0	0
LINER, EVAPORATOR COIL	0	0	0
TOTAL	12	58	16

The standard warranty offered on all NS-model vehicles was 36 month/36,000 miles. There were no extended warranty coverage options related specifically to the subject components. Owners may have purchased additional warranty coverage through third-party providers not affiliated with DaimlerChrysler Corporation (DCC); this warranty data is not available to DCC and is not included in this response. It should also be noted that the subject vehicles have been outside of the warranty window for a significant length of time and it is highly likely that customers opted to have repairs completed since the warranty expiration at independent repair shops not affiliated in any way with DCC. It is not possible to determine if the vehicles identified by NHTSA have been the subject of relevant out of warranty repairs at either independent repair facilities or DCC dealerships.

The detailed response that lists the warranty claims, as requested in Items a. through k. is provided in Enclosure 02 as a Microsoft Access 2000 table, titled "REPAIR DATA".

- Q3.** In its Defect Information Report dated October 5, 2004, DaimlerChrysler stated that backwinding of the subject components in the subject vehicles probably occurred during an "intervening service or repair." Furnish a technical explanation and any supporting documents for this claim. Please include in your discussion, an explanation as to how the subject components may become backwound or overwound during service or repair given that the steering wheel/subject component is designed to lock upon ignition key-off and the subject component is designed to lock if it is removed from the steering column.
- A3.** The recommended removal and installation steps for the steering column service are detailed in the NS Service Manual. The service procedure for the removal of the steering column requires the removal of the clockspring from the multi-function switch prior to removing the steering column. The steering column installation procedure includes a "CLOCKSPRING CENTERING PROCEDURE." The following four steps must be performed to assure the clockspring is centered prior to installing the steering wheel onto the steering column:
- Depress the two plastic locking pins to disengage the lock mechanism
  - With the lock mechanism disengaged, rotate the clockspring rotor clockwise until the rotor stops. Do not apply excessive force.
  - From the end of the clockwise travel, rotate the rotor three turns counterclockwise. The clockspring wires should be at the top. Engage clockspring locking pins.
  - From the center locked position, rotate the clockspring one-half additional turn counterclockwise. The clockspring wiring should now be at the bottom. The clockspring is now correctly positioned for installation of the steering wheel.

During the second step above, rotate the clockspring clockwise until the rotor stops without applying excessive force, the service technician could prematurely stop the clockwise rotation, prior to the rotor stopping. While rotating the clockspring, the internal tape could create friction, as the tape winds toward the full stop. This increased friction could indicate to the service technician that the clockspring rotor has reached the full stop position. This premature clockwise rotation would result in the clockspring not reaching the true centered position during the 3-1/2 turn counterclockwise rotation, resulting in a non-centered clockspring. The clockspring tape would be biased to have fewer left turn rotations versus right turn rotations of the steering wheel. The fewer left turn rotations of the steering wheel have the potential of causing a backwound condition. Conversely, if the service technician does not complete the full 3-1/2



counterclockwise rotation, the clockspring would be biased to have fewer right turn rotations versus left turn rotations of the steering wheel. The fewer right turn rotations of the steering wheel have the potential of causing an overwound condition.

Another potential service scenario where a backwound or overwound clockspring could result is if the technician does not assure the front wheels of the vehicle are in the straight forward position, as stated in the Service Manual, before beginning the steering column removal procedure. When the steering column and clockspring are subsequently reinstalled, the clockspring may be centered to a steering column which is not correctly centered. This has the potential of creating either a backwound or overwound condition depending on the original position of the steering column/wheel.

During all service procedures requiring the removal of the steering column, the procedure requires the removal of the steering wheel and clockspring. The clockspring only rotates when the steering wheel, which depresses the locking tabs, is mounted to the steering column. The position of the ignition key, either in the locked or unlocked state, is irrelevant. The main factor contributing to a backwound or overwound clockspring during service is failure to accurately follow the recommended repair procedures stated earlier in this response. The service procedure clearly states step-by-step procedures to assure that the clockspring is properly centered when installed onto the steering column.

- Q4. Describe all assessments, analyses, tests, studies, surveys, simulations, investigations, inquiries, and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, DaimlerChrysler. For each such action, provide the following information:**
- a. Action title or identifier;**
  - b. The actual or planned start date;**
  - c. The actual or expected end date;**
  - d. Brief summary of the subject and objective of the action;**
  - e. Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and**
  - f. A brief summary of the findings and/or conclusions resulting from the action, whether final, tentative, or postulated.**

**ATTACHMENT**

**For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action. If an action is not complete, provide a detailed schedule for the work to be done, tentative findings and/or conclusions, and provide an update within 10 days of completion of the action.**

- A4. Since the opening of EA04-013, DCC initiated a recall D17 Part Retention Survey and a High Mileage NS Vehicle Survey to obtain seven circuit clockspring field return samples for analysis.**

The objective of the recall D17 Part Retention survey is to determine the percentage of returned recall parts currently being replaced that show signs of the backround condition. The analysis of the clocksprings is targeted to start in late January, 2005.

The High Mileage NS Vehicle Survey was initiated in order to obtain high mileage vehicle seven circuit clocksprings for analysis. The intent of the survey was to establish a benchmark for features such as airbag circuit resistance, internal tape condition, and airbag light illumination resistance levels. The criteria for selection of the survey vehicles included: no prior service for airbag light on, no prior service to the clockspring and steering column, and no prior accidents involving a driver airbag deployment. DCC identified 26 vehicles, 15 of which had more than 70,000 miles and an additional five which had between 65,000 and 70,000 miles. Eight of the vehicles had mileages in excess of 100,000 miles. The average was approximately 82,600 miles. In all cases, the clockspring was centered, the airbag circuit resistance was within the specifications, and no signs of any backround condition or fatigue were detected.

This new information strongly corroborates DCC's position that this population of vehicles is not prone to having clocksprings that were backround at the factory, and that field incidences of clockspring backwinding in these vehicles are due to intervening service and repair. This new information also supports DCC's position that a clockspring that is backround at the factory will fail early in the life of the vehicle, well before the 70,000 mile threshold defining the recall population. A detailed summary of the High Mileage Vehicle Survey is included as Enclosure 03 - SURVEY.